



UNIVERSITY OF CALGARY  
FACULTY OF SCIENCE  
DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE

1. **Course:** ECOL 429, Ecology of Individuals -- Fall 2018

Instructor Name	Email	Phone	Office	Hours
<i>L01:</i> ( MWF 13:00 - 13:50 in MS 527)				
Ralph Cartar	cartar@ucalgary.ca	403 n220 3640	BI355	TBA
Robert Barclay	barclay@ucalgary.ca	403-220-3564	BI 330	TBA
<b>Coordinator(s):</b>				
Louise Hahn	lhahn@ucalgary.ca	403-220-5280	BI264	anytime

**Course Site:**

D2L: ECOL 429 L01-(Fall 2018)-Ecology of Individuals

**Department of Biological Sciences:**

Office: BIO 186  
Phone: 403 220-3140  
Email: biosci@ucalgary.ca

**Note:**

Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

**Prerequisite(s):** Biology 313 and 315.

**Notes:** There is a week-end field trip scheduled after the start of classes.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
Midterm Exam	30	24 Oct. 2018 TBA
Lab Reports	35	
Final Exam	35	

There will be a Final Exam scheduled by the Registrar's Office.

Passing grade is both the lecture and laboratory components are required for a student to pass the course as a whole.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
<b>Minimum % Required</b>	90 %	86 %	82 %	79%	76%	73 %	70 %	66%	62%	57 %	50 %

This course has a registrar scheduled final exam.

#### 4. Missed Components of Term Work:

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself/themself with these regulations. See also [Section E.3](#) of the University Calendar.

#### 5. Scheduled out-of-class activities:

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
MT EXAM	TBA	Wednesday, October 24, 2018 at 6:30 pm	2 Hours

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

#### 6. Course Materials:

#### 7. Examination Policy:

No aids are allowed on tests or examinations.

Students should also read the Calendar, [Section G](#), on Examinations.

#### 8. Approved Mandatory and Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

#### 9. Writing across the Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also [Section E.2](#) of the University Calendar.

#### 10. Human & living organism studies statements:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

**STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS.** Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

#### 11. Reappraisal of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

1. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **15 days** of either being notified about the mark, or of the item's return to the

class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections [1.1](#) and [1.2](#) of the University Calendar

2. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section 1.3](#) of the University Calendar.

## 12. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](tel:403-220-2208).
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email [addy@ucalgary.ca](mailto:addy@ucalgary.ca) or phone 403 220-6979. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- i. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty

- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

**ECOLOGY 429 - FALL 2018 TENTATIVE LECTURE SCHEDULE**

<b>Date</b>	<b>Topic</b>
<b>Section I Life Histories - Barclay</b>	
September 07	Introduction to the ecology of individuals
10	Life history ecology - What is a life history and how does it vary?
12	Demography and life tables
14	Net reproductive rate and reproductive value
17	Is there a cost of reproduction?
19	Why does reproductive effort vary?
21	Trade-offs: age and size at maturity
24	Trade-offs: size and number of offspring
26	Aging and senescence
28	Aging and senescence
October 1	Sex ratio of offspring and its adjustment
3	Sex ratio of offspring and its adjustment
<b>Section II Behavioural Ecology - Barclay/Cartar</b>	
5	Introduction to Behavioural Ecology
8	<b>Thanksgiving - no lecture</b>
10	Social behaviour
12	Cooperation and altruism
15	Cooperation and altruism
17	Reproductive behaviours
19	Reproductive behaviours
22	Foraging I
24	Foraging II
26	Foraging III
29	Fleeing I
31	Fleeing II
November 2	Fighting
<b>Section III Physiological and Morphological Ecology - Cartar</b>	
November 5	Introduction to physiological & morphological ecology
7	Size & shape
9	Self-thinning
<b>12-16</b>	<b>READING DAYS - NO LECTURES</b>
19	Photosynthesis
21	Thermal sensitivity
23	Body temperature
26	Thermoregulation
28	Metabolic rate
30	Metabolism & body size

**Ecology 429 - Tentative Lab Schedule - Fall 2018**

Week	Dates	Density effects on growth, phenology and reproduction	Herbivory effects on growth and reproduction	Ecological allometry	Bateman's principle	Animal behaviour
1	Sept 11, 13	<b>Introduction + establish first beetle cultures</b>  * start 2x HD and 2x LD cultures (W1)  * brief intro to allometry field trip Sat. Sept. 15		<b>Data collection field trip Sat. Sept. 15</b>		
2	Sept 18, 20	*Start 2x HD and 2x LD cultures (W2)	<b>Plant seeds</b>  *start planning study (students should read about topic before next week)			
3	Sept 25, 27	*Start 2x HD and 2x LD cultures (W3)  *Count larvae from Week 1	* thin plants  * finish study plan (TA approval)  * assign herbivory treatments	<b>Introduce topic in lab: study design, analysis</b>		
4	Oct 2, 4	*Start 2x HD and 2x LD cultures (W4)  *Count larvae from Week 2	*Pollination for 4 days/plant	*Analysis	<b>Establish fruit fly cultures</b>	
5	Oct 9, 11  (Oct. 8 Thanksgiving)	*Start 2x HD and 2x LD cultures (W5)  *Count larvae from Week 3		<b>Report due</b>	* remove adult flies  * add 2-4 drops water if media is dry	<b>Design experiment</b>  * choose behavior and organism  * think about question
6	Oct 16, 18	*Start 2x HD and 2x LD cultures (W6)  *Count larvae from Week 4			* count all offspring in vials A,B,C  * count number, sex and phenotype of offspring in vial D  * introduce analysis	* complete study design  * schedule data collection
7	Oct 23, 25  Midterm exam (2 hr evening Oct. 24)	*Count and weigh all larvae, pupae and adults from all vials (week 6 will only be 1 week old)  *introduce analysis		Report returned	*Analysis and time in lab to work on assignment	
8	Oct 30, Nov 1	*analysis and time in lab to work on assignment	* week 6  * collect and compile data  * data analysis		<b>Report due</b>	
9	Nov 6, 8	<b>Report due the day after your lab by midnight</b>  (to give students feedback from FF lab, and a bit of space between assignments)	* Lab time for analysis and assignment		Report returned  (a week early so students have feedback for beetle assignment)	
10	Nov 13, 15	<b>Reading week: no labs (labs open for students)</b>				
11	Nov 20, 22	Report returned	<b>Report due the day after your lab by midnight</b>  (incorporate feedback from Beetle assignment)			
12	Nov 27, 29					
13	Dec 4, 6		Report returned			<b>Oral presentations</b>

**LAB REPORTS**

Assignments are due at the start of your regularly scheduled laboratory day during the weeks indicated below. **Late assignments will be accepted at most 24 hours after the due date with a 10% penalty.**

- |  |                             |     |
|--|-----------------------------|-----|
| 1. Ecological allometry - short (Intro, Results, Discussion) | Due Week 5, return Week 7   | 5%  |
| 2. Bateman principle - short (Intro, Results, Discussion)    | Due Week 8, return Week 9   | 5%  |
| 3. Density effects - medium (Intro, Methods, Results, Disc)  | Due Week 9, return Week 11  | 9%  |
| 4. Animal behaviour - group oral presentation                | Due Week 13                 | 6%  |
| 5. Herbivory effects: longer (Intro, Methods, Results, Disc) | Due Week 11, return Week 13 | 10% |

**Note** - A portion of the grade for each report will be assigned to your success at obtaining results. Therefore, handle all organisms carefully, double check that the experimental conditions have been implemented as expected, and be attentive to the state of the organisms each week. Also, measure as accurately as possible and proof-read your data records for errors of measurement or recording. If you detect a problem with your cultures/organisms/experiment, discuss them immediately with your TA.

**Course Outcomes**

**At the end of this course you should be able to:**

1. Distinguish ecological and genetic (evolutionary) aspects of individuality and describe the associated implications for unitary and modular organisms
2. Characterize the influences of morphology, physiology and behaviour on the life histories of individual organisms and their implications for population growth and adaptation
3. Use understanding of how limited resources, time and opportunity constrain options to generate hypotheses and predictions concerning individual performance
4. Recognize the pervasive influence of body size on all aspects of individual capacity and performance and its consequences for morphology, physiology, behaviour and life histories
5. Explain the roles of physiology and behaviour as mechanisms for contending with variation and uncertainty in abiotic and biotic conditions
6. Critique evolutionary explanations for individual performance with reference to the consequences of the timing of events that affect survival and reproduction for individual fitness
7. Design an effective experiment to test predictions based on an hypothesis
8. Prepare and present an effective oral report with increased confidence
9. Write a coherent, informative report of scientific findings in manuscript style

**Department Approval:**

Electronically Approved

**Date:** 2018-09-04 14:29

**Associate Dean's Approval for  
out of regular class-time  
activity:**

Electronically Approved

**Date:** 2018-09-05 12:36